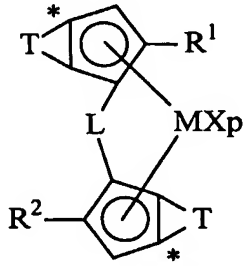
CLAIMS

1. A multistage process comprising the following steps:

step a) polymerizing propylene with optionally one or more monomers selected from ethylene and alpha olefins of formula $CH_2=CHT^1$, wherein T^1 is a C_2-C_{20} alkyl radical in the presence of a catalysts system, supported on a porous organic polymer, comprising:

i) one or more metallocene compounds of formula (I)



(I)

wherein:

M is an atom of a transition metal selected from those belonging to group 3, 4, 5, 6 or to the lanthanide or actinide groups in the Periodic Table of the Elements;

p is an integer from 0 to 3, being equal to the formal oxidation state of the metal M minus 2;

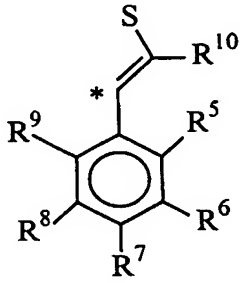
X, same or different, is a hydrogen atom, a halogen atom, or a R, OR, OSO_2CF_3, OCOR, SR, NR_2 or PR_2 group, wherein R is a linear or branched, saturated or unsaturated C_1-C_{20} alkyl, C_3-C_{20} cycloalkyl, C_6-C_{20} aryl, C_7-C_{20} alkylaryl or C_7-C_{20} arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements; or two X can optionally form a substituted or unsubstituted butadienyl radical or a OR'O group wherein R' is a divalent radical selected from C_1-C_{20} alkylidene, C_6-C_{40} arylidene, C_7-C_{40} alkylarylidene and C_7-C_{40} arylalkylidene radicals;

L is a divalent bridging group selected from C_1-C_{20} alkylidene, C_3-C_{20} cycloalkylidene, C_6-C_{20} arylidene, C_7-C_{20} alkylarylidene, or C_7-C_{20} arylalkylidene radicals optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements, and silylidene radical containing up to 5 silicon atoms;

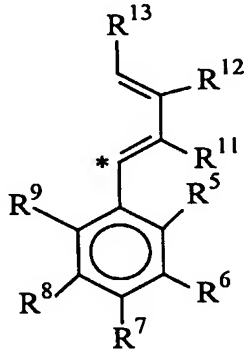
R^1, is a linear or branched, saturated or unsaturated C_1-C_{40}-alkyl radical, optionally containing one or more heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements;

R^2 is a branched C_1-C_{40}-alkyl radical;

T, equal to or different from each other, is a moiety of formula (IIIa) or (IIIb):



(IIIa)



(IIIb)

wherein:

the atom marked with the symbol * is bonded to the atom marked with the same symbol in the compound of formula (I);

R^5, R^6, R^7, R^8 and R^9, equal to or different from each other, are hydrogen atoms or a linear or branched, saturated or unsaturated C_1-C_{40}-alkyl, C_3-C_{40}-cycloalkyl, C_6-C_{40}-aryl, C_7-C_{40}-alkylaryl, or C_7-C_{40}-arylalkyl radicals, optionally containing one or more heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements; or two or more R^5, R^6, R^7, R^8 and R^9 can join to form a 4-7 saturated or unsaturated membered rings, said ring can bear C_1-C_{20} alkyl substituents;

R^{10} is a hydrogen atom or a linear or branched, saturated or unsaturated C_1-C_{20}-alkyl, C_3-C_{20}-cycloalkyl, C_6-C_{20}-aryl, C_7-C_{20}-alkylaryl, or C_7-C_{20}-arylalkyl radicals, optionally containing one or more heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements;

R^{11}, R^{12} and R^{13}, equal to or different from each other, are hydrogen atoms or a linear or branched, saturated or unsaturated C_1-C_{20}-alkyl, C_3-C_{20}-cycloalkyl, C_6-C_{20}-aryl, C_7-C_{20}-alkylaryl, or C_7-C_{20}-arylalkyl radicals, optionally containing one or more heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements; or two or more R^{11}, R^{12} and R^{13} can join

to form a 4-7 saturated or unsaturated membered rings, said ring can bear C_1-C_{20} alkyl substituents;

ii) an alumoxane or a compound capable of forming an alkyl metallocene cation;

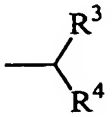
step b) contacting, under polymerization conditions, in a gas phase, ethylene with one or more alpha olefins of formula $CH_2=CHT^2$, wherein T^2 is a C_1-C_{20} alkyl radical, and optionally with a non-conjugated diene, in the presence of the polymer obtained in step a).

2. The multistage process according to claim 1 wherein the catalyst system further comprises iii) an organo aluminum compound.

3. The multistage process according to claims 1 or 2 wherein step b) is carried out in the presence of an additional organo aluminum compound.

4. The multistage process according to anyone of claims 1-3 wherein M is titanium, zirconium or hafnium; X is a hydrogen atom, a halogen atom or a R group wherein R is is a linear or branched, saturated or unsaturated C_1-C_{20} alkyl, C_3-C_{20} cycloalkyl, C_6-C_{20} aryl, C_7-C_{20} alkylaryl or C_7-C_{20} arylalkyl radical, optionally containing heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements; L is selected from $Si(Me)_2$, $SiPh_2$, SiPhMe, $SiMe(SiMe_3)$, CH_2, $(CH_2)_2$, $(CH_2)_3$ and $C(CH_3)_2$.

5. The multistage process according to anyone of claims 1-4 wherein R^1 is a methyl or ethyl radical; R^2 is a group of formula (II)



(II)

wherein R^3 and R^4, equal to or different from each other, are linear or branched, saturated or unsaturated C_1-C_{10}-alkyl radicals optionally containing one or more heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements; and R^{10} is a hydrogen atom or a linear or branched, saturated C_1-C_{20}-alkyl radical.

6. The multistage process according to anyone of claims 1 to 5 wherein in the compound of formula (I) R^5, R^6, R^8 and R^9, are hydrogen atoms and R^7 is a group of formula $-C(R^{14})_3$ wherein R^{14}, equal to or different from each other, are a linear or branched, saturated or unsaturated C_1-C_{10}-alkyl, C_3-C_{10}-cycloalkyl, C_6-C_{10}-aryl,

C_7-C_{10}-alkylaryl, or C_7-C_{10}-arylalkyl radicals, optionally containing one or more heteroatoms belonging to groups 13-17 of the Periodic Table of the Elements.

7. The multistage process according to claim 6 wherein in the compound of formula (I) both T groups have formula (IIIb).
8. The multistage process according to claim 7 wherein in the compound of formula (I) in one T group, R^{12} is a C_1-C_{20} alkyl radical; and in the other T group R^{12} being hydrogen.
9. The multistage process according to claim 6 wherein in the compound of formula (I) one T group has formula (IIIa) and the other one has formula (IIIb).
10. The multistage process according to claim 6 wherein in the compound of formula (I) both T groups have formula (IIIb) and R^{11}, R^{12} and R^{13} are hydrogen atoms.
11. The multistage process according to anyone of claims 1 to 10 wherein the organic porous polymer has preferably porosity due to pores with diameter up 10 μm (100000 Å) higher than 0.1 cc/g.
12. The multistage process according to claim 11 wherein in the organic porous polymer the total porosity due to all pores whose diameter is comprised between 0.1 μm (1000 Å) and 2 μm (20000 Å) is at least 30% of the total porosity due to all pores whose diameter is comprised between 0.02 μm (200 Å) and 10 μm (100000 Å).
13. The multistage process according to anyone of claims 1-12 wherein:
    in step a) from 5% to 90% by weight, with respect to the polymer produced in the whole process, of a propylene homopolymer or a propylene copolymer containing up to 20% by mol of derived units of one or more alpha olefins of formula CH_2=CHT^1 is produced, wherein T^1 is a C_2-C_{20} alkyl radical; and
    in step b) from 10 to 95% by weight, with respect to the polymer produced in the whole process, an ethylene copolymer containing from 5% to 90% by mol, of derived units of one or more alpha olefins of formula CH_2=CHT^2 is produced, wherein T^2 is a C_1-C_{20} alkyl radical.
14. The multistage process according to claim 13 wherein the ethylene copolymer obtained in step b) contains up to 20% by mol of a non conjugated diene.
15. The multistage process according to claims 13 or 14 wherein in step a) a propylene homopolymer is produced.
16. The multistage process according to anyone of claims 13-15 wherein in step b) the comonomers are selected from propylene and 1-butene.

17. A propylene polymer compositions obtainable according to the process of anyone of claims 1-17 comprising:

a) 5% to 90% by weight, of a propylene homopolymer or a of propylene copolymer containing up to 20% by mol of derived units of one or more alpha olefins of formula $CH_2=CHT^1$ wherein T^1 is a C_2-C_{20} alkyl radical; said propylene polymer or copolymer having isotactic pentads (mmmm) higher than 90%;

b) from 10 to 95% by weight of an ethylene copolymer containing from 5% to 90% by mol, of derived units of one or more alpha olefins of formula $CH_2=CHT^2$ wherein T^2 is a C_1-C_{20} alkyl radical;

said composition having a flowability index equal to or lower than 2.